Antarctic Meteorite NEWSLETTER

A periodical issued by the Antarctic Meteorite Working Group to inform scientists of the basic characteristics of specimens recovered in the Antarctic.

Volume 11, Number 2 | August 1988

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!!!!!!!! SAMPLE REQUEST DEADLINE: OCTOBER 3, 1988 (SEE PAGE 2) !!!!!!!!

SAMPLE-REQUEST GUIDELINES

All sample requests should be made in writing to

Secretary, MWG
SN2/Planetary Science Branch
NASA/Johnson Space Center
Houston, TX 77058 USA.

Requests that are received by the MWG Secretary before October 3, 1988 will be reviewed at the MWG meeting on October 13-15, 1988 to be held in Washington D.C. Requests that are received after the October 3 deadline may possibly be delayed for review until the MWG meets again in the spring of 1989. PLEASE SUBMIT YOUR REQUESTS ON TIME. Questions pertaining to sample requests can be directed in writing to the above address or can be directed by telephone to (713) 483-3274 or 483-5135.

Requests for samples are welcomed from research scientists of all countries, regardless of their current state of funding for meteorite studies. Graduate student requests should be initialed or countersigned by a supervising scientist to confirm access to facilities for analysis. All sample requests will be reviewed by the Meteorite Working Group (MWG), a peer-review committee that guides the collection, curation, allocation, and distribution of the U. S. Antarctic meteorites. Issuance of samples does not imply a commitment by any agency to fund the proposed research. Requests for financial support must be submitted separately to the appropriate funding agencies. As a matter of policy, U. S. Antarctic meteorites are the property of the National Science Foundation and all allocations are subject to recall.

Each request should accurately refer to meteorite samples by their respective identification numbers and should provide detailed scientific justification for the proposed research. Specific requirements for samples, such as sizes or weights, particular locations (if applicable) within individual specimens, or special handling or shipping procedures should be explained in each request. Consortium requests should be initialed or countersigned by a member of each group in the consortium. All necessary information should probably be condensable into a one- or two-page letter, although informative attachments (reprints of publications that explain rationale, flow diagrams for analyses, etc.) are welcome.

Samples can be requested from any meteorite that has been made available through announcement in any issue of the Antarctic Meteorite Newsletter (beginning with 1(1) in June, 1978). Many of the meteorites have also been described in three Smithsonian Contr. Earth Sci.: No. 23, No. 24, No. 26.

NEWS AND INFORMATION

This newsletter presents classifications and descriptions of a large number of meteorites which include the last samples from the 1984 collection and the first samples from the 1987 collection. There is a particularly good selection of meteorites of special petrologic type in the 1987 collection. The achondrites include aubrites, ureilites, howardites, eucrites, and a diogenite. The howardites are particularly notable because of their size and previous scarcity in the Antarctic collection. Noteworthy among the seven irons and three mesosiderites are two anomalous irons and two large mesosiderites. The carbonaceous chondrites include good suites of C2 and C4 meteorites, and two highly equilibrated carbonaceous chondrites tentatively identified as C5 and C6 meteorites.

Also included in this newsletter are results of surveys of numerous meteorites for Al-26 and thermoluminescence (TL). These studies provide information on the thermal and radiation histories of the meteorites and can be used as measures of their terrestrial ages. The Al-26 data were provided by John Wacker (Battelle NW) and the TL data by Derek Sears (University of Arkansas).

The Smithsonian Institution anticipates publication this fall of the next in the series of Smithsonian Contributions to Earth Sciences, Number 28. It is entitled "Field and Laboratory Investigations of Meteorites from Victoria Land and the Thiel Mountains Region, Antarctica, 1982-1983 and 1983-1984", and is edited by U. Marvin and G. MacPherson. Contact Glenn MacPherson, Department of Mineral Sciences, Smithsonian Institution, Washington, DC 20560, for more information.

NEW METEORITES FROM 1984-1987 COLLECTIONS

Pages 14-35 contain preliminary descriptions and classifications of meteorites that were completed since publication of issue 11(1) (February, 1988). Some large (>150g) specimens (regardless of petrologic type) and all "pebble"- sized (<150g) specimens of special petrologic type (carbonaceous chondrite, unequilibrated ordinary chondrite, achondrite, etc.) are represented by separate descriptions. However, some specimens of non-special petrologic type are listed only as single line entries in Table 1. For convenience, new specimens of special petrologic type are also recast in Table 2.

Macroscopic descriptions of stony meteorites were performed at NASA/JSC. These descriptions summarize hand-specimen features observed during initial examination. Classification is based on microscopic petrography and reconnaissance-level electron microprobe analyses using polished sections prepared from a small chip of each meteorite. For each stony meteorite the sample number assigned to the preliminary examination section is included. In some cases, however, a single microscopic description was based on thin sections of several specimens believed to be members of a single fall.

Meteorite descriptions contained in this issue were contributed by the following individuals:

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Washington, DC

Antarctic Meteorite Locations

ALH - Allan Hills
BOW - Bowden Neve
BTN - Bates Nunatak
DOM - Dominion Range
DRP - Derrick Peak
EET - Elephant Moraine
GEO - Geologist Range
GRO - Grosvenor Mountains
ILD - Inland Forts
LEW - Lewis Cliff
MAC - MacAlpine Hills
MBR - Mount Baldr
MET - Meteorite Hills
MIL - Miller Range
OTT - Outpost Nunatak
QUE - Queen Alexandra Range
PCA - Pecora Escarpment
PGP - Purgatory Peak
RKP - Reckling Peak
TIL - Thiel Mountains
TYR - Taylor Glacier

** NOTES TO TABLES 1 and 2:

"Weathering" categories:

A: Minor rustiness; rust haloes on metal particles and rust stains along fractures are minor.
B: Moderate rustiness; large rust haloes occur on metal particles and rust stains on internal fractures are extensive.
C: Severe rustiness; metal particles have been mostly stained by rust throughout.

"Fracturing" categories:

A: Minor cracks; few or no cracks are conspicuous to the naked eye and no cracks penetrate the entire specimen.
B: Moderate cracks; several cracks extend across exterior surfaces and the specimen can be readily broken along the cracks.
c: Severe cracks; specimen readily crumbles along cracks that are both extensive and abundant.

Table 1.

List of Newly Classified Antarctic Meteorites **

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
ALH 84121	141.4	H-5 CHONDRITE	C	B/C	17	15
ALH 84128	2.1	H-5 CHONDRITE	C	B	19	17
ALH 84129	37.6	L-6 CHONDRITE	A	A	23	20
ALH 84133	70.5	H-5 CHONDRITE	B	A	18	16
ALH 84144	53.9	H-5 CHONDRITE	C	A/B	17	15
ALH 84145	19.2	H-5 CHONDRITE	B	B	17	15
ALH 84146	33.2	H-5 CHONDRITE	B	B/C	18	16
ALH 84149	12.0	H-5 CHONDRITE	C	C	17	15
ALH 84150	20.0	H-6 CHONDRITE	B/C	A	19	17
ALH 84152	6.4	H-5 CHONDRITE	B/C	A	17	15
ALH 84154	87.6	LL-6 CHONDRITE	A	A	31	25
ALH 84155	113.9	H-5 CHONDRITE	B/C	A	18	16
ALH 84156	27.8	H-5 CHONDRITE	B/C	A	18	16
ALH 84158	53.7	H-5 CHONDRITE	B/C	A	18	15
ALH 84161	82.9	H-5 CHONDRITE	C	B/C	17	15
ALH 84162	42.3	H-5 CHONDRITE	C	B/C	18	15
ALH 84169	98.4	L-6 CHONDRITE	B/C	C	25	22
ALH 84172	3.0	H-5 CHONDRITE	B/C	B	16	15
ALH 84173	1.7	L-6 CHONDRITE	C	B	25	21
ALH 84234 ~	3.9	L-6 CHONDRITE	A	B		
ALH 85051	4.9	H-5 CHONDRITE	B/C	A	18	16
ALH 85052	17.4	H-6 CHONDRITE	A/B	A	18	16
ALH 85056	7.5	H-5 CHONDRITE	C	A	18	16
ALH 85058	0.3	L-4 CHONDRITE	A/B	A	25	17-19
ALH 85067	1.3	H-5 CHONDRITE	B	A	18	16
ALH 85068	3.6	H-5 CHONDRITE	C	B	18	16
ALH 85069	4.6	H-6 CHONDRITE	B	B	19	16
ALH 85070	12.9	L-3 CHONDRITE	A/B	A	4-25	1-29
ALH 85071	18.7	H-5 CHONDRITE	C	B	18	16
ALH 85074	3.3	H-5 CHONDRITE	C	A	18	16
ALH 85077	12.0	H-5 CHONDRITE	B/C	A	18	16
ALH 85078	1.2	L-6 CHONDRITE	C	B/C	23	20
ALH 85081	12.2	H-6 CHONDRITE	B	B/C	18	16
ALH 85121	55.3	H-3 CHONDRITE	B	B/C	9-20	3-31
ALH 86603	104.5	H-5 CHONDRITE	A/B	A	18	16
ALH 86604	12.8	L-6 CHONDRITE	B/C	A	24	20
ALH 86605 ~	12.3	L-6 CHONDRITE	A/B	A		
ALH 86606	4.5	H-5 CHONDRITE	B/C	A	17	15
ALH 86607	2.9	H-6 CHONDRITE	C	A	18	16
ALH 86608 ~	9.8	L-6 CHONDRITE	B/C	A		
ALH 86609 ~	7.8	L-6 CHONDRITE	A/B	A		
ALH 86610	0.8	L-5 CHONDRITE		A	23	20
ALH 86611	9.3	H-5 CHONDRITE	C	A	18	16
ALH 86612	1.5	H-5 CHONDRITE	C	A	19	17

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
LEW 86083	198.9	H-5 CHONDRITE	C	A	18	16
LEW 86086	104.0	H-5 CHONDRITE	C	B	18	16
LEW 86089	84.8	H-6 CHONDRITE	C	A	18	16
LEW 86091	66.7	H-5 CHONDRITE	C	A	18	17
LEW 86096	70.9	H-5 CHONDRITE	C	A	19	16
LEW 86098	52.8	L-4 CHONDRITE	C	A	23	19
LEW 86211	163.1	IRON-ANOMALOUS				
LEW 86215	123.3	H-5 CHONDRITE	C	A	18	16
LEW 86225	102.8	H-5 CHONDRITE	C	B	18	16
LEW 86250	141.8	H-5 CHONDRITE	C	A	19	17
LEW 86281	55.7	H-6 CHONDRITE	C	A/B	17	15
LEW 86307	4.9	L-3 CHONDRITE	B	A	3-29	2-14
LEW 86312	101.8	H-5 CHONDRITE	B	A	16	14
LEW 86339	21.3	L-4 CHONDRITE	C	A	23	3-23
LEW 86341	9.4	H-5 CHONDRITE	C	A	17	16
LEW 86350 ~	19.2	H-6 CHONDRITE	C	B		
LEW 86352	26.9	L-5 CHONDRITE	A/B	A	23	20
LEW 86357	3.4	L-5 CHONDRITE	A/B	A	24	20
LEW 86359 ~	2.7	L-6 CHONDRITE	C	A		
LEW 86360	181.5	L-4 CHONDRITE	B/C	A	24	16-20
LEW 86364 ~	19.8	H-6 CHONDRITE	C	A		
LEW 86367	10.5	L-3 CHONDRITE	B	A	1-22	2-23
LEW 86371	146.6	H-5 CHONDRITE	C	B	19	17
LEW 86372 ~	11.8	L-6 CHONDRITE	C	A		
LEW 86378 ~	3.6	LL-6 CHONDRITE	C	A		
LEW 86380	31.6	H-4 CHONDRITE	B/C	A	16	14-21
LEW 86381 ~	6.6	H-6 CHONDRITE	C	B		
LEW 86392	6.0	L-5 CHONDRITE	B	A	25	21
LEW 86393	69.9	H-5 CHONDRITE	C	B	18	16
LEW 86399 ~	6.9	L-6 CHONDRITE	B/C	A		
LEW 86404 ~	8.2	L-6 CHONDRITE	B/C	A		
LEW 86408	1.4	L-3 CHONDRITE	C	A	11-25	2-23
LEW 86409 ~	23.7	L-6 CHONDRITE	C	A		
LEW 86416 ~	18.2	H-6 CHONDRITE	C	A/B		
LEW 86417	1.6	L-3 CHONDRITE	B	A	1-22	2-24
LEW 86418	42.8	H-5 CHONDRITE	C	C	17	15
LEW 86419 ~	2.3	LL-6 CHONDRITE	B	A		
LEW 86421 ~	2.5	L-6 CHONDRITE	C	A		
LEW 86425 ~	2.4	L-6 CHONDRITE	C	A		
LEW 86426 ~	3.1	L-6 CHONDRITE	C	A		
LEW 86429 ~	6.6	L-6 CHONDRITE	B/C	A/B		
LEW 86432	7.3	LL-6 CHONDRITE	B	A	30	24
LEW 86433 ~	6.1	H-6 CHONDRITE	C	A		
LEW 86435	4.8	H-4 CHONDRITE	C	A	18	6-18
LEW 86436	3.9	L-3 CHONDRITE	C	A	6-26	2-22
LEW 86442	59.1	H-5 CHONDRITE	C	A	18	16
LEW 86445 ~	9.3	H-6 CHONDRITE	C	A		
LEW 86446	9.8	H-4 CHONDRITE	C	A	18	8-19
LEW 86447 ~	9.5	L-6 CHONDRITE	B/C	A		
LEW 86463	64.8	H-5 CHONDRITE	C	A	18	16
LEW 86466 ~	70.9	H-6 CHONDRITE	C	A/B		
LEW 86470	58.5	H-5 CHONDRITE	C	A	18	16

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
LEW 86471	82.9	H-6 CHONDRITE	C	A	17	15
LEW 86474 ~	6.8	H-6 CHONDRITE	C	A		
LEW 86478 ~	1.9	L-6 CHONDRITE	A/B	A		
LEW 86479	141.2	H-5 CHONDRITE	C	A	17	15
LEW 86483 ~	10.0	LL-6 CHONDRITE	B/C	A		
LEW 86485	51.9	H-5 CHONDRITE	C	A	18	16
LEW 86490 ~	2209.1	L-6 CHONDRITE	B	B/C		
LEW 86493 ~	4.6	H-6 CHONDRITE	C	A/B		
LEW 86498	134.2	IRON-ANOMALOUS				
LEW 86501	84.6	H-5 CHONDRITE	C	B	18	16
LEW 86504 ~	7.6	H-6 CHONDRITE	B/C	A		
LEW 86505	43.9	L-3 CHONDRITE	A	A/B	2-30	1-20
LEW 86513	6.1	H-5 CHONDRITE	B/C	B	18	16
LEW 86514	65.1	H-5 CHONDRITE	C	A	18	16
LEW 86522 ~	42.7	H-6 CHONDRITE	C	A		
LEW 86528 ~	49.7	L-6 CHONDRITE	A/B	A/B		
LEW 86534	89.3	H-5 CHONDRITE	B/C	A/B	18	16
LEW 86537 ~	17.2	H-6 CHONDRITE	C	A		
LEW 86540	21.1	IRON-OCTAHEDRITE				
LEW 86541 ~	12.6	L-6 CHONDRITE	B	A		
LEW 86543 ~	26.4	H-6 CHONDRITE	B/C	A		
LEW 86544	65.3	H-6 CHONDRITE	C	A	18	16
LEW 86549	50.1	L-3 CHONDRITE	B	A/B	5-20	1-29
EET 87500	8132.0	MESOSIDERITE	B	A		30-31
EET 87501	4403.0	MESOSIDERITE	B/C	A		30-31
EET 87503	1734.5	HOWARDITE	A	A		20-56
EET 87504	10.7	IRON W/SIL.INCLS.	B	B/C	3	6
EET 87505	14.5	IRON W/SIL.INCLS.	B/C	B/C	3	6
EET 87506	15.2	IRON W/SIL.INCLS.	B/C	B/C	3	6
EET 87507	36.2	CARBONACEOUS C4	B	B	29	25
EET 87508	13.4	CARBONACEOUS C4	A/B	A		
EET 87509	583.9	HOWARDITE	B	B		21-50
EET 87510	250.3	HOWARDITE	B	B		21-54
EET 87511	65.1	UREILITE	B	A	14	12
EET 87512	181.6	HOWARDITE	B/C	A		21-53
EET 87513	394.5	HOWARDITE	A/B	A		17-53
EET 87514	33.6	CARBONACEOUS C4	B	A		
EET 87515 ~	588.1	L-6 CHONDRITE	A	A		
EET 87516	36.0	IRON-OCTAHEDRITE				
EET 87517	272.6	UREILITE	B/C	A	8	8
EET 87518	349.6	HOWARDITE	B	B		15-51
EET 87519	23.2	CARBONACEOUS C4	A/B	A		
EET 87520	52.3	EUCRITE	B	A		27-53
EET 87521	30.7	EUCRITE	A	A	91	41-61
EET 87522	68.6	CARBONACEOUS C2	B	B	0-39	0-7
EET 87523	27.5	UREILITE	C	B/C	14	12
EET 87525	10.3	CARBONACEOUS C4	A/B	A		
EET 87526	88.2	CARBONACEOUS C4	B	B	29	24
EET 87527	5.8	CARBONACEOUS C4	A/B	A		
EET 87528	40.5	HOWARDITE	A	A/B	31-33	21-60
EET 87529	35.7	CARBONACEOUS C4	B	A	29	

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
EET 87530	5.0	DIOGENITE	B	A/B		26
EET 87531	527.2	HOWARDITE	B	B		17-47
EET 87532	193.5	EUCRITE	B/C	B		33-55
EET 87534	1155.3	L-5 CHONDRITE	B	B/C	23	19
EET 87535 ~	1230.8	L-6 CHONDRITE	A	A		
EET 87540 ~	1172.4	L-6 CHONDRITE	B/C	A		
EET 87543 ~	1761.9	H-6 CHONDRITE	C	A		
EET 87717	27.2	UREILITE	B/C	B	10-15	12
EET 87860	32.8	CARBONACEOUS C5	A/B	A	28	
LEW 87001	4.0	CARBONACEOUS C2	A	A	0-28	0-6
LEW 87002	6.9	EUCRITE	A	A		12-31
LEW 87003	2.1	CARBONACEOUS C2	B	A	0-39	0-5
LEW 87004	208.4	EUCRITE	A	A		31-56
LEW 87005	17.7	HOWARDITE	A	A		17-66
LEW 87006	269.5	MESOSIDERITE	B	A/B		17-36
LEW 87007	3.2	AUBRITE	B	B		0
LEW 87008	1.4	CARBONACEOUS C2	B	A		
LEW 87009	50.5	CARBONACEOUS C6	A	A	31	
LEW 87010	2.6	EUCRITE	A	A		28-55
LEW 87011	1.0	AUBRITE	B	A/B		
LEW 87012	1.1	LL-5 CHONDRITE	B	B	29	23
LEW 87013	0.2	AUBRITE	A/B	B		
LEW 87014 ~	8.8	LL-6 CHONDRITE	A	A		
LEW 87015	1.3	HOWARDITE	A	A		14-58
LEW 87016	16.8	CARBONACEOUS C2	B	B	0-28	0-1
LEW 87017	1.3	AUBRITE	A/B	A		
LEW 87018	1.2	AUBRITE	A/B	A		
LEW 87019	0.5	AUBRITE	A/B	B/C		
LEW 87020	1.9	AUBRITE	B	B/C		0
LEW 87021	0.5	AUBRITE	A/B	B		
LEW 87022	75.4	CARBONACEOUS C2	B	B	0-70	3-11
LEW 87023	14.0	H-5 CHONDRITE	C	A	17	15
LEW 87025	0.9	CARBONACEOUS C2	B	B		
LEW 87026	22.7	EUCRITE	A	A		32-50
LEW 87027	0.8	CARBONACEOUS C2	B	A		
LEW 87028	1.2	CARBONACEOUS C2	A	A		
LEW 87167	1.4	CARBONACEOUS C2	B	B		
LEW 87249	3.1	CARBONACEOUS C2	A	A	0-47	0-5
LEW 87271	0.9	CARBONACEOUS C2	B	A	0-24	0-5
LEW 87294	3.9	AUBRITE	B	A/B		0
MAC 87300	167.5	CARBONACEOUS C2	B	A	0-52	1-8
MAC 87301	110.9	CARBONACEOUS C2	B	A	0-45	2-9
MAC 87302	1094.6	L-4 CHONDRITE	A/B	A	24	20
MAC 87303	254.2	L-4 CHONDRITE	A/B	A	24	20
MAC 87310	411.0	L-4 CHONDRITE	A/B	A	23	19

~ Classified by using refractive indices.

Table 2.

New Specimens of Special Petrologic Type

Achondrites

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
LEW 87007	3.2	AUBRITE	B	B		0
LEW 87011	1.0	AUBRITE	B	A/B		
LEW 87013	0.2	AUBRITE	A/B	B		
LEW 87017	1.3	AUBRITE	A/B	A		
LEW 87018	1.2	AUBRITE	A/B	A		
LEW 87019	0.5	AUBRITE	A/B	B/C		
LEW 87020	1.9	AUBRITE	B	B/C		0
LEW 87021	0.5	AUBRITE	A/B	B		
LEW 87294	3.9	AUBRITE	B	A/B		0
EET 87530	5.0	DIOGENITE	B	A/B		26
EET 87520	52.3	EUCRITE	B	A		27-53
EET 87521	30.7	EUCRITE	A	A	91	41-61
EET 87532	193.5	EUCRITE	B/C	B		33-55
LEW 87002	6.9	EUCRITE	A	A		12-31
LEW 87004	208.4	EUCRITE	A	A		31-56
LEW 87010	2.6	EUCRITE	A	A		28-55
LEW 87026	22.7	EUCRITE	A	A		32-50
EET 87503	1734.5	HOWARDITE	A	A		20-56
EET 87509	583.9	HOWARDITE	B	B		21-50
EET 87510	250.3	HOWARDITE	B	B		21-54
EET 87512	181.6	HOWARDITE	B/C	A		21-53
EET 87513	394.5	HOWARDITE	A/B	A		17-53
EET 87518	349.6	HOWARDITE	B	B		15-51
EET 87528	40.5	HOWARDITE	A	A/B	31-33	21-60
EET 87531	527.2	HOWARDITE	B	B		17-47
LEW 87005	17.7	HOWARDITE	A	A		17-66
LEW 87015	1.3	HOWARDITE	A	A		14-58
EET 87511	65.1	UREILITE	B	A	14	12
EET 87517	272.6	UREILITE	B/C	A	8	8
EET 87523	27.5	UREILITE	C	B/C	14	12
EET 87717	27.2	UREILITE	B/C	B	10-15	12

Table 2 (cont.).

Carbonaceous Chondrites

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
EET 87522	68.6	CARBONACEOUS C2	B	B	0-39	0-7
LEW 87001	4.0	CARBONACEOUS C2	A	A	0-28	0-6
LEW 87003	2.1	CARBONACEOUS C2	B	A	0-39	0-5
LEW 87008	1.4	CARBONACEOUS C2	B	A		
LEW 87016	16.8	CARBONACEOUS C2	B	B	0-28	0-1
LEW 87022	75.4	CARBONACEOUS C2	B	B	0-70	3-11
LEW 87025	0.9	CARBONACEOUS C2	B	B		
LEW 87027	0.8	CARBONACEOUS C2	B	A		
LEW 87028	1.2	CARBONACEOUS C2	A	A		
LEW 87167	1.4	CARBONACEOUS C2	B	B		
LEW 87249	3.1	CARBONACEOUS C2	A	A	0-47	0-5
LEW 87271	0.9	CARBONACEOUS C2	B	A	0-24	0-5
MAC 87300	167.5	CARBONACEOUS C2	B	A	0-52	1-8
MAC 87301	110.9	CARBONACEOUS C2	B	A	0-45	2-9
EET 87507	36.2	CARBONACEOUS C4	B	B	29	25
EET 87508	13.4	CARBONACEOUS C4	A/B	A		
EET 87514	33.6	CARBONACEOUS C4	B	A		
EET 87519	23.2	CARBONACEOUS C4	A/B	A		
EET 87525	10.3	CARBONACEOUS C4	A/B	A		
EET 87526	88.2	CARBONACEOUS C4	B	B	29	24
EET 87527	5.8	CARBONACEOUS C4	A/B	A		
EET 87529	35.7	CARBONACEOUS C4	B	A	29	
EET 87860	32.8	CARBONACEOUS C5	A/B	A	28	
LEW 87009	50.5	CARBONACEOUS C6	A	A	31	

Chondrites - Type 3

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
ALH 85121	55.3	H-3 CHONDRITE	B	B/C	9-20	3-31
ALH 85070	12.9	L-3 CHONDRITE	A/B	A	4-25	1-29
LEW 86307	4.9	L-3 CHONDRITE	B	A	3-29	2-14
LEW 86367	10.5	L-3 CHONDRITE	B	A	1-22	2-23
LEW 86408	1.4	L-3 CHONDRITE	C	A	11-25	2-23
LEW 86417	1.6	L-3 CHONDRITE	B	A	1-22	2-24
LEW 86436	3.9	L-3 CHONDRITE	C	A	6-26	2-22
LEW 86505	43.9	L-3 CHONDRITE	A	A/B	2-30	1-20
LEW 86549	50.1	L-3 CHONDRITE	B	A/B	5-20	1-29

Table 2 (cont.).

Irons

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
EET 87504	10.7	IRON W/SIL.INCLS.	B	B/C	3	6
EET 87505	14.5	IRON W/SIL.INCLS.	B/C	B/C	3	6
EET 87506	15.2	IRON W/SIL.INCLS.	B/C	B/C	3	6
LEW 86211	163.1	IRON-ANOMALOUS				
LEW 86498	134.2	IRON-ANOMALOUS				
LEW 86540	21.1	IRON-OCTAHEDRITE				
EET 87516	36.0	IRON-OCTAHEDRITE				

Stony-Irons

Sample Number	Weight (g)	Classification	Weathering	Fracturing	% Fa	% Fs
EET 87500	8132.0	MESOSIDERITE	B	A		30-31
EET 87501	4403.0	MESOSIDERITE	B/C	A		30-31
LEW 87006	269.5	MESOSIDERITE	B	A/B		17-36

Table 3 summarizes possible pairings of the new specimens with each other and with previously classified specimens, based on descriptive data in this newsletter issue. Readers who desire a more comprehensive review of the meteorite pairings in the U. S. Antarctic collection should refer to the compilation provided by Dr. E. R. D. Scott, as published in issue 9(2) (June, 1986).

TABLE 3.

TENTATIVE PAIRINGS FOR NEW SPECIMENS

ANOMALOUS IRON:
LEW86211 and LEW86498.

AUBRITE:
LEW87007, 87011, 87013, 87017, 87018, 87019, 87020, 87021, and 87294.

C-2 CHONDRITE:
LEW87001, 87003, 87008, 87022, 87025, 87027, 87028, 87167, and 87249.

MAC87300 and 87301.

C-4 CHONDRITE:
EET87507, 87508, 87514, 87519, 87525, 87526, 87527, and 87529.

L-3 CHONDRITE:
LEW86307 and 86367

LEW86408, 86417, 86436, 86505 with 86127.

L-4 CHONDRITE:
MAC87302 and 87303

HOWARDITE:
EET87503, 87509, 87510, 87512, 87513, 87518 and 87531.

LEW87005 and 87015.

IRON WITH SILICATE INCLUSIONS:
EET87504, 87505, and 87506.

MESOSIDERITE:
EET87500 and 87501.

UREILITE:
EET87511, 87523, and 87717.

Sample No.: ALH85070
Weight (g): 12.9
Dimensions (cm): 3 x 2.5 x 1.5
Meteorite Type: L3 Chondrite

Location: Allan Hills
Field No.: 2231

Macroscopic Description: Roberta Score
Fusion crust covers about 75% of this stone. The interior is light-gray and has abundant inclusions. Oxidation is light.

Thin Section (,3) Description: Brian Mason
The section shows abundant chondrules and chondrule fragments, up to 2 mm across, in a fine-grained matrix containing a few coarser grains of nickel-iron and troilite. A variety of chondrule types is present including granular and porphyritic olivine and olivine-pyroxene, barred olivine and crypto-crystalline pyroxene. Much of the pyroxene is polysynthetically twinned clinobronzite. Minor weathering is indicated by rusty halos around metal grains. Microprobe analyses show olivine and pyroxene of variable composition: olivine, Fa_{4-25}, mean Fa_{18} (CV FeO is 38); pyroxene, Fs_{1-29}. The small amount of nickel-iron suggests L group, and the variability of olivine and pyroxene compositions type 3; hence the meteorite is classified as an L3 chondrite (estimated L3.6).

Sample No.: ALH85121
Weight (g): 55.3
Dimensions (cm): 5 x 4 x 1
Meteorite Type: H3 Chondrite

Location: Allan Hills
Field No.: 2629

Macroscopic Description: Roberta Score
Frothy brown and black fusion crust covers the T-surface of this mushroom-shaped stone while thick (2 mm) black ropy fusion crust covers the B surface. Numerous fractures penetrate the interior which is moderately to heavily weathered. A weathering rind that ranges in thickness from <1 mm to 5 mm is present. The matrix is medium gray in color with numerous clasts/chondrules visible.

Thin Section (,3) Description: Brian Mason
The section shows abundant chondrules and chondrule fragments, up to 3 mm across, in a matrix of fine-grained olivine and pyroxene with moderate amounts of nickel-iron and troilite (sometimes rimming chondrules). Chondrule types include granular and porphyritic olivine and olivine-pyroxene, and radiating or cryptocrystalline pyroxene. Weathering is extensive, with limonitic staining and small areas of red-brown limonite throughout the section. Microprobe analyses show olivine and pyroxene with a considerable range in composition: olivine, Fa_{9-20} (CV FeO is 16); pyroxene, Fs_{3-31}. The content of nickel-iron suggests H group, and the variability of olivine and pyroxene compositions type 3, hence the meteorite is tentatively classified H3 (estimated H3.8).

Sample No.:	EET87500; 87501	Location:	Elephant Moraine
Weight (g):	8132.0; 4403.0	Field No.:	4688; 4367
Dimensions (cm):	25x16x12.5; 17.5x11x11		
Meteorite Type:	Mesosiderite		

Macroscopic Description: Roberta Score
Deep regmaglypts are present on the weathered surface of EET87500, a mesosiderite. Only a few small patches of fusion crust remain on the surface. Abundant pyroxene inclusions, up to 2.5 cm in their longest dimension, are visible on the exterior. This meteorite is moderately weathered. The interior consists of approximately two-thirds silicates, coarse-grained pyroxene and plagioclase, and one-third metal. The exterior of EET87501 has regmaglypts and a thin fusion crust with flow marks. The interior is identical to EET87500 except that it appears to be more weathered.

Thin Section (87500,2; 87501,2) Description: Brian Mason
These sections are so similar in all respects that the specimens are almost certainly paired. They show a granular aggregate of approximately 50% pyroxene, 30% nickel-iron, and 20% plagioclase, with accessory merrillite and an SiO polymorph, probably tridymite. The grain size is relatively coarse, with individual pyroxenes and plagioclases up to 2 mm across; many pyroxenes are partly or completely converted into a mosaic of small granules. Weathering is minimal. Pyroxene compositions vary somewhat around a mean of Wo_6Fs_{30}: Wo_{3-14}, Fs_{30-31}, En_{54-62}. Plagioclase composition is An_{91-96}. The meteorite is a mesosiderite.

Sample No.:	EET87503; 87509; 87510; 87512; 87513; 87518; 87531	Location:	Elephant Moraine
Weight (g):	1734.5; 583.9; 250.3; 181.6; 394.5; 349.6; 527.2	Field No.:	2233; 2678; 2632; 2644; 4687; 2235; 3156
Dimensions (cm):	16.5x10x8.5; 10x6x7; 8x6x4; 7x5x4; 11x6x4.5; 7x6x5; 10x8x7		
Meteorite Type:	Howardite		

Macroscopic Description: Rene Martinez
All of these specimens retain at least a small patch of fusion crust. EET87513 is completely covered. All have a light gray matrix hosting a variety of angular clasts: fine-grained monomineralic clasts, coarse-grained feldspathic clasts, and aphanitic black clasts ranging from sub-mm to 2 cm in size.

Thin Section (87503,2;87509,11;87510,6;87512,8;87513,8;87518,7;87531,8) Description: Brian Mason
EET87503,2 shows a groundmass of comminuted pyroxene (orthopyroxene and pigeonite) and plagioclase (grains up to 0.3 mm) with a few larger mineral grains and rare polymineralic clasts up to 2.5 mm across. Opaques are present in small amounts. Microprobe analyses show a wide range in pyroxene composition: Wo_{1-22}, Fs_{20-56}, En_{24-76}, but with orthopyroxene clustered around Wo_2Fs_{23} and pigeonite around $Wo_{12}Fs_{50}$. Plagioclase composition is An_{88-95}. In the field 87509, 87510, 87518, and 87531 were noted as possibly paired. These, and EET87513 closely resemble EET87503,2 and the same description applies to them. EET87512,8 contains a clast, 9x3 mm, consisting of subequal amounts of plagioclase (An_{78-93}) and pyroxene (slightly variable, average Wo_7Fs_{33}). These meteorites are howardites and are all very similar.

Sample No.:	EET87504; 87505; 87506	Location:	Elephant Moraine
Weight (g):	10.7; 14.5; 15.2	Field No.:	4557; 4353; 4369
Dimensions (cm):	2x1.5x1; 3x2x1; 2.5x2x1.5		
Meteorite Type:	Iron with silicate inclusions		

Macroscopic Description: Roberta Score

All three specimens are weathered to a deep red-brown color with no fusion crust remaining. Oxidation haloes are obvious on the exterior surfaces as is gold-colored metal. Fractures penetrate the interior of the three specimens. Chipping revealed somewhat less weathered metal, lots of oxidation, and some colorless crystals. A minute amount of salt deposit is present. All three fragments are obviously paired.

Thin Section (87504,4;87505,3;87506,4) Description: Brian Mason and Roy S. Clarke, Jr.

These specimens are so similar in all respects that they must be pieces of a single meteorite. The sections are made up largely of nickel-iron, which includes numerous anhedral grains and aggregates of silicate minerals (grain size 0.3-3.1 mm), dominantly pyroxene, with minor olivine and a little plagioclase. One large grain of apatite was noted in 87504,4. Weathering is extensive, the sections being seamed with brown limonite. Microprobe analyses give the following compositions: olivine, Fa_3; pyroxene, Wo_2Fs_6 (CaO content varies slightly, 0.7-1.2%); plagioclase somewhat variable, average An_3 (CaO 0.1-1.6%, K_2O 0.2-2.2%). Metal areas of 87504,4 consist of kamacite in contact with large amounts of plessite. The association within the plessite areas is: clear taenite borders (probably tetrataenite), cloudy taenite, clear taenite, and comparatively large areas of martensite. Areas of troilite in the mm size range are present, several containing well developed (0.1 mm) crystals of radiating graphite. The meteorites are irons with silicate inclusions.

Sample No.:	EET87507; 87508; 87514; 87519; 87525; 87526; 87527; 87529	Location:	Elephant Moraine
Weight (g):	36.2; 13.4; 33.6; 23.2; 10.3; 88.2; 5.8; 35.7	Field No.:	4331; 4345; 5079; 5032; 4313; 4183; 2205; 4179
Dimensions (cm):	3.5x3x2; 3.2x2x1; 3x3x2; 3x2.7x2; 2.7x1.7x1.5; 5x4x3; 2.7x1.5x1; 4x3x2		
Meteorite Type:	C4 Condrite		

Macroscopic Description: Rene Martinez, Carol Schwarz and Roberta Score
All of these specimens have weathered and fractured patchy fusion crust with salt present in some cases. Interiors are fine-grained and light to dark gray. Dark inclusions, up to 1.5 mm, are plentiful. A 5 mm spherical black aphanitic inclusion was found in EET87507.

Thin Section (87507,5; 87508,2; 87514,4; 87519,2; 87525,2; 87526,8; 87527,2; 87529,4) Description: Brian Mason
The section of EET87526 shows an aggregate of small (0.01-0.02 mm) olivine grains and a little opaque material, with sparse chondrules up to 1.5 mm across. Fusion crust, 0.6 mm thick, borders part of the section. Olivine composition is Fa_{29}; a little pyroxene, Wo_1Fs_{24}, and plagioclase, An_{49}, are present. The opaque material is mainly magnetite with a little pentlandite. This is a C4 chondrite. The sections of EET87507 and 87529 are so similar to EET87526 in textures and mineral compositions that the meteorites can be confidently paired. EET87508, 87514, 87519, 87525, and 87527 also appear to belong to this group of C4 chondrites. These five were examined in thin section but were not analyzed by electron microprobe.

Sample No.:	EET87511; 87523; 87717	Location:	Elephant Moraine
Weight (g):	65.1; 27.5; 27.2	Field No.:	4814; 4590; 4458
Dimensions (cm):	4.5x5x2.5; 3x2.5x2; 4x3x2		
Meteorite Type:	Ureilite		

Macroscopic Description: Roberta Score and Rene Martinez
Two small patches of dull black fusion crust remain on EET87511. The exterior surface is greenish in color due to weathering. The interior is black with abundant platy minerals and some plagioclase. Oxidation occurs between the minerals. EET87523 is fairly coarse grained with a high proportion of mafic minerals. There is heavy oxidation in some areas but rust is absent in others. A few small patches of fusion crust remain. The same description applies to EET87717.

Thin Section (EET87511,2;87523,5;87717,4) Description: Brian Mason
EET87511,2 shows an aggregate of subhedral to anhedral grains (0.2-2.5 mm) of olivine with minor amounts of pyroxene. The grains are rimmed with black carbonaceous material containing a little nickel-iron and troilite. Microprobe analyses of EET87511 give the following compositions: olivine, Fa_{14}; pyroxene, Wo_5Fs_{12}; one grain of augite, $Wo_{36}Fs_9$ with 4.7% Al_2O_3, was analyzed. The meteorite is relatively unshocked. EET87523,5 and EET87717,4 are very similar in texture and mineral compositions to EET87511. These meteorites are ureilites and are probably paired.

Sample No.:	EET87516	Location:	Elephant Moraine
Weight (g):	36.0	Field No.:	4557
Dimensions (cm):	3.4 x 3.2 x 1.4		
Meteorite Type:	Finest Octahedrite		

Macroscopic Description: Roy S. Clarke, Jr.
This kite-shaped in outline individual is 3.4 cm from head to tail and 3.2 cm at the shoulders. Its mass is concentrated at the head and shoulders where it is 1.4 cm thick. The narrow tail is curved away from the plane of the head and shoulders. A median slice for metallographic examination was taken perpendicular to this plane and from head to tail, resulting in a section comma-shaped in outline. The smooth curvature of one surface suggests an anterior surface due to oriented flight. Surfaces, however, have been severely weathered and fusion crust has been mainly removed or is too corroded to recognize. The surface coating is reddish-brown, partially iridescent terrestrial oxides.

Polished Section Description: Roy S. Clarke, Jr.
The median slice provided approximately 2 cm^2 for metallographic examination. Half of the length of the possible anterior surface edge is coated with 0.2 to 0.4 mm of terrestrial oxides, while the rest of this surface has very little adhering oxide. The other surface is mainly covered with oxides, also in the 0.2 to 0.4 mm range. This edge oxide contains a 2 mm long and 0.2 mm thick area of melt crust covered by 0.2 mm of oxide.

The structure is that of a very narrow banded finest octahedrite. Kamacite lamellae have band widths from 0.02 to 0.08 mm, the smaller widths being more common. Lamellae lengths are as long as 1 to 2 mm. Kamacite throughout the surface has been converted to α_2, probably during atmospheric ablation. Some shock deformation is also present. Renmants of Neumann bands remain as slightly undulating lines of very small ($<1\mu m$) precipitates. Plessite is cellular, and taenite borders appear to have been transformed by heat. Troilite is present and also appears heat-altered. Daubreelite in the few micron size range was tentatively identified. Schreibersite was not observed. This is probably either an anomalous meteorite or a low phosphorus IVA.

Sample No.: EET87517
Weight (g): 272.6
Dimensions (cm): 7 x 4.5 x 4
Meteorite Type: Ureilite

Location: Elephant Moraine
Field No.: 2149

Macroscopic Description: Roberta Score
This ureilite fragment has both shiny and dull fusion crust. Flow marks are visible on some of the shiny fusion crust and some of the dull fusion crust is frothy and pitted. Areas devoid of fusion crust are crystalline and black and green in color. Oxidation is moderate to heavy. The interior is heavily oxidized. Green and black platy minerals are surrounded by oxidized matrix. The meteorite is extremely coherent.

Thin Section (,6) Description: Brian Mason
The section shows a close-packed aggregate of subhedral to anhedral grains (0.3-1.8 mm) of olivine and pyroxene in subequal amounts. Some pyroxene grains show very narrow exsolution lamellae, presumably augite. Individual grains have thin rims of black matrix. Weathering is extensive, with brown limonitic staining throughout the section. Microprobe analyses give the following compositions: olivine, Fa_8, pyroxene, Wo_5Fs_8. The meteorite is a ureilite and is relatively unshocked.

Sample No.: EET87520
Weight (g): 52.3
Dimensions (cm): 4.5 x 2.5 x 2.5
Meteorite Type: Unbrecciated Eucrite

Location: Elephant Moraine
Field No.: 4576; 4586

Macroscopic Description: Roberta Score
This specimen consists of two pieces that fit together. The matrix is dark and fine-grained. It has an igneous texture--graphic intergrowth of coarse plagioclase laths and mafic minerals. Some metal is visible and oxidation is moderate throughout the matrix.

Thin Section (,6) Description: Brian Mason
The section shows a granular aggregate of subequal amounts of pyroxene and plagioclase (grains 0.6 - 1.8 mm in maximum dimension), with accessory tridymite and chromite. Most of the pyroxene is pigeonite (average composition Wo_5Fs_{50}), but a small amount of augite ($Wo_{37}Fs_{27}$) is present. Some of the pigeonite grains show narrow exsolution lamellae. Plagioclase composition is An_{89}. The meteorite is an unbrecciated eucrite; it is very similar in texture and mineral compositions to Moore County.

Sample No.: EET87521
Weight (g): 30.7
Dimensions (cm): 3.7 x 2.5 x 2
Meteorite Type: Brecciated Eucrite

Location: Elephant Moraine
Field No.: 4452

Macroscopic Description: Carol Schwarz
About 30% of this smooth rounded specimen is covered with black to brown shiny fusion crust. The interior of this breccia is dark and fine-grained with white and yellowish inclusions. It is coherent and has several large 2-3 mm white inclusions located near the exterior of the specimen.

Thin Section (,2) Description: Brian Mason
The section shows a microbreccia of pale brown pyroxene and colorless plagioclase clasts, up to 1.2 mm across, in a comminuted groundmass of these minerals. Pyroxene compositions show a wide range: Wo 15-39, Fs 41-61, En 12-41, but cluster around $Wo_{20}Fs_{45}$ and $Wo_{37}Fs_{48}$ (one grain is $Wo_{22}Fs_{61}$). One grain of Fe-rich olivine, Fa_{91}, was analyzed. Plagioclase composition is An_{68-89}. An SiO polymorph, probably tridymite, is present in accessory amounts. The meteorite is a brecciated eucrite, but the iron-rich nature of the pyroxenes and the presence of fayalitic olivine distinguishes it from most eucrites.

Sample No.: EET87522
Weight (g): 68.6
Dimensions (cm): 5 x 4 x 3
Meteorite Type: C2 Chondrite

Location: Elephant Moraine
Field No.: 4468

Macroscopic Description: Roberta Score
Dull, black fusion crust covers about 40% of this carbonaceous chondrite fragment. Areas devoid of fusion crust are black with <1 mm sized irregular inclusions and chondrules. A 1 cm thick weathering rind was exposed along one surface. A minute amount of salt deposit is present in the interior.

Thin Section (,10) Description: Brian Mason
The section has a black matrix with numerous small (less than 0.1 mm) mineral grains and sparse chondrules (up to 0.6 mm across). Microprobe analyses show olivine generally close to Mg_2SiO_4 in composition, but also a few Fe-rich grains; pyroxene is less abundant than olivine, and most grains have compositions near $MgSiO_3$. The meteorite is a C2 chondrite.

Sample No.: EET87528
Weight (g): 40.5
Dimensions (cm): 3 x 3 x 2.5
Meteorite Type: Howardite

Location: Elephant Moraine
Field No.: 2153

Macroscopic Description: Rene Martinez
This brecciated achondrite retains black fusion crust on about 50% of its exterior. Fractured surfaces appear fresh. Inclusions are mostly small mineral fragments of either pyroxene or plagioclase, but there are two conspicuous clasts: one about 1 cm x 0.5 cm and the other about 0.5 x 0.5 cm in cross-section. One was sampled for thin sectioning. The interior matrix is light gray.

Thin Section (,8;,10) Description: Brian Mason
EET87528,8 is a microbreccia of pyroxene (both orthopyroxene and pigeonite) and plagioclase clasts up to 2.2 mm in maximum dimension in a matrix of comminuted pyroxene and plagioclase. Orthopyroxene is more abundant than pigeonite, and occurs as larger clasts. EET87528,10 consists mainly of a large (9 x 7 mm) diogenite clast, bordered by material like 87528,8. Pyroxene compositions show the following range: Wo 1-24, Fs 21-60, En 31-76; pyroxene in the diogenite clast is slightly variable, averaging Wo_2Fs_{23}. Plagioclase composition is An_{80-95}. The meteorite is a howardite, but appears to differ from EET87503 and other howardites in that group.

Sample No.: EET87530
Weight (g): 5.0
Dimensions (cm): 1.5 x 1.5 x 1.5
Meteorite Type: Diogenite

Location: Elephant Moraine
Field No.: 4572

Macroscopic Description: Roberta Score
Thin patches of fusion crust are scattered evenly over the exterior surfaces of this diogenite, covering about 50% of the specimen. Areas devoid of fusion crust are white, crystalline pyroxene with some green grains up to 1.5 mm in size. Oxidation is heavy in some areas.

Thin Section (,5) Description: Brian Mason
The section shows numerous pyroxene clasts, up to 6 mm across, in a groundmass of comminuted pyroxene; chromite is present in accessory amount. Minor weathering is indicated by small areas of brown limonitic staining. The pyroxene is very uniform in composition, Wo_3Fs_{26}. The meteorite is a diogenite.

Sample No.:	EET87532	Location:	Elephant Moraine
Weight (g):	193.5	Field No.:	2631
Dimensions (cm):	9 x 4 x 4		
Meteorite Type:	Polymict Eucrite		

Macroscopic Description: Rene Martinez
This eucrite is heavily weathered. A few dark fine-grained clasts are visible up to about 1 cm across. One coarse-grained monomineralic inclusion is about 2 cm in length. The matrix is fine-grained and dark-gray with a 0.5 cm thick weathering rind.

Thin Section (,8) Description: Brian Mason
The section shows a microbreccia, consisting largely of angular monomineralic pyroxene and plagioclase clasts up to 1.2 cm in maximum dimension, and a few lithic clasts, in a matrix of comminuted pyroxene and plagioclase. Clasts show basaltic to subophitic texture, except for one (6 mm across), which consists of large (up to 2.5 mm) rounded subhedral pyroxene (Wo_7Fs_{33}) grains in turbid brown glass. Microprobe analyses show pyroxene of variable composition: Wo 2-40, Fs 33-55, En 14-60; plagioclase is An_{91-93}. The meteorite is a polymict eucrite.

Sample No.:	EET87860	Location:	Elephant Moraine
Weight (g):	32.8	Field No.:	2261
Dimensions (cm):	3 x 2 x 1.5		
Meteorite Type:	C5 Chondrite		

Macroscopic Description: Rene Martinez
This specimen is light gray and very fine-grained with three principal minerals: a mafic mineral, white plagioclase and sulfide (~5-10%). About 40% of the pebble is covered with fusion crust. No chondrules were visible.

Thin Section (,3) Description: Brian Mason
The section shows an aggregate of anhedral olivine grains (0.3-0.6 mm across) and minor plagioclase, with a small amount of finely dispersed opaque material (magnetite and pentlandite). Chondrules, if present, are almost completely integrated with the matrix. Olivine composition is Fa_{28}; pyroxene was not detected; plagioclase composition is quite variable, An_{21-72}. The mineralogy is similar to that of EET87526 and other C4 chondrites, but the texture is much coarser, and the meteorite is tentatively classified as a C5 chondrite.

Sample No.: LEW86211; 86498
Weight (g): 163.1; 134.2
Dimensions (cm): 4.5x4x3; 5x3x3
Meteorite Type: Anomalous Iron

Location: Lewis Cliff
Field No.: 2317; 4894

Macroscopic Description: Roy S. Clarke, Jr.
A 72.6 gram specimen (LEW86211,3), 4.1 x 2.9 x 2.8 cm, was broken from a larger mass during processing, resulting in approximately two-thirds of its surface area being original exterior and the remainder being interior. The exterior surface is weathered fusion crust, predominately reddish brown in color, containing occasional patches of retained black fusion crust. There are areas of iridescent coloring, and while smooth to the touch, the surface has an unusual roughness and angularity of appearance when viewed with low magnification. There are occasional very small areas (0.1 to 0.5 mm) of bronze colored material. The broken surface areas have a hackly appearance and a predominately yellow color that varies from pale brass yellow to bronze yellow. Under magnification (20x) the yellow material is seen to be present as globules, as fracture surfaces and crystal faces, and as fine filaments. A few small areas appear to be vugs coated with a drusy material. Whether these vug fillings are indigenous or a weathering phenomenon is not clear. A few very small areas of silicates appear to be present as is an occasional chromite.

Polished Section Description: Roy S. Clarke, Jr. and Rene Martinez
This cursory description is based on the examination of a 1 cm^2 section, and of a slice of 6 cm^2 removed from the piece described above. These reveal a matrix of coarsely crystalline troilite containing globular metal. Metal and troilite are in roughly equal proportions. A typical metal area is 0.3 x 0.6 mm, although particles larger or much smaller are also present. Troilite crystals are in the mm size range and are cracked on the 1/10 mm range. Weathering has penetrated along some of these cracks and along metal/troilite interfaces. A martensitic pattern develops in the metal on etching. Centers of these areas contain 8-9% Ni, while edges contain as much as 20% Ni. There are also occasional silicate-rich areas present. The silicates are fine-grained, the areas are vesicular, and weathering has penetrated into these areas. LEW86498 was broken exposing a fine-grained, vesicular silicate inclusion about 1.5 x 2 cm in cross section.

Sample No.: LEW86307; 86367
Weight (g): 4.9; 10.5
Dimensions (cm): 3x1x1; 2.5x2x1.5
Meteorite Type: L3 Chondrite

Location: Lewis Cliff
Field No.: 3349; 3327

Macroscopic Description: Roberta Score, Rene Martinez
LEW86307 is oblong-shaped and covered with about 80% fusion crust; 86367 has >90% fusion crust. Both specimens are moderately weathered, but inclusions and chondrules are abundant and obvious. No metal is visible.

Thin Section (86307,2;86367,3) Description: Brian Mason
LEW86307,2 shows a close-packed aggregate of chondrules and chondrule fragments, up to 1.8 mm across, in a minimum amount of fine-grained dark matrix which contains a small amount of nickel-iron and troilite. Chondrule types include granular and porphyritic olivine and olivine-pyroxene, and radiating and cryptocrystalline pyroxene. Weathering is extensive, with brown limonitic staining throughout. Microprobe analyses show olivine and pyroxene with a wide range of composition: olivine, Fa_{3-29} (CV FeO is 42); pyroxene, Fs_{2-14}. The low content of nickel-iron suggests L group, and the wide range of olivine and pyroxene compositions, type 3; thus this meteorite is classified as an L3 chondrite (estimated L3.5). LEW87367 is very similar to 86307 in all respects and they are probably paired. Both are also similar to LEW86127 and several other LEW86xxx L3 chondrites (Antarctic Meteorite Newsletter v. 11, #1, p. 18).

Sample No.: LEW86357
Weight (g): 3.4
Dimensions (cm): 2 x 1.5 x 0.5
Meteorite Type: L5 Chondrite with enclave

Location: Lewis Cliff
Field No.: 3329

Macroscopic Description: Cecilia Satterwhite
Small patches of fusion crust cover one surface. Inclusions are dark and light gray and 1-2 mm in size. Matrix is fine-grained and light gray.

Thin Section (,2) Description: Brian Mason
Most of this section consists of a typical L5 chondrite, but it contains an achondritic enclave, 6 mm across, with a sharp boundary against the chondritic material. The enclave consists almost entirely of olivine as subhedral grains and prisms up to 0.2 mm long, together with a little plagioclase and pyroxene; opaques are absent. The enclave olivine is Mg-rich (Fa_9, whereas the chondritic olivine is Fa_{24}); plagioclase is calcic, An_{80}; one grain of pyroxene was analyzed, $Wo_{11}Fs_8$.

Sample No.:	LEW86408; 86417; 86436; 86505	Location:	Lewis Cliff
Weight (g):	1.4; 1.6; 3.9; 43.9	Field No.:	3480; 3492; 3431; 4895
Dimensions (cm):	1x1x0.5; 1.2x1x0.8; 1.5x1x0.5; 4x3.5 1.5		
Meteorite Type:	L3 Chondrite		

Macroscopic Description: Rene Martinez

All of these , with the exception of LEW86505, show light and dark chondrules in a dark coherent matrix. 86505 is comparatively fresh with a light gray matrix and large, fresh inclusions up to 4 mm.

Thin Section (86408,2;86417,2;86436,2;86505,2) Description: Brian Mason

These meteorites are very similar in all respects and are possibly paired with LEW86127 and several other LEW86xxx L3 chondrites (Antarctic Meteorite Newsletter, v. 11, #1, p. 18). The sections show a close-packed aggregate of chondrules and chondrule fragments, up to 2.1 mm across, in a minimum amount of fine-grained dark matrix which contains a little nickel-iron and troilite. Chondrule types include granular and porphyritic olivine and olivine-pyroxene, and radiating and cryptocrystalline pyroxene. Weathering is extensive, with brown limonitic staining throughout. Microprobe analyses show olivine and pyroxene with a wide range of compositions: olivine, Fa_{1-30}; pyroxene, Fs_{1-24}. The low content of nickel-iron suggests L group, and the wide range of olivine and pyroxene compositions type 3, hence these meteorites are tentatively classified as L3 chondrites (estimated L3.5).

Sample No.: LEW86540
Weight (g): 21.1
Dimensions (cm): 2.2 x 2.4 x 1.1
Meteorite Type: Finest Octahedrite

Location: Lewis Cliff
Field No.: 4944

Macroscopic Description: Roy S. Clarke, Jr.
This aerodynamically shaped, tektite-like specimen is a slightly out-of-round (2.2 x 2.4 cm) disk (1.1 cm thick), with a small segment (2-3 mm) missing from its edge. Anterior and posterior surfaces intersect at a sharp edge which undulates slightly from a plane. Maximum thickness (1.1 cm) is approximately at the center of this plane. The two surfaces are smooth and have an almost uniform radii of curvature, the radius of the anterior surface being roughly 2 cm and that of the posterior surface roughly 5 cm.

Surfaces are predominately reddish-brown due to weathering, have small black patches of remnant fusion crust, and have iridescent coloring particularly near the edge. Fine streamers of fusion crust (~0.1 mm) radiate from the center of the anterior surface to the edge, with a very small accumulation of fusion crust at the edge. Indications of a very fine Widmanstatten pattern stand in relief in several patches of the posterior surface and can be seen with low magnification.

Polished Section Description: Roy S. Clarke, Jr.
A median slice perpendicular to the anterior and posterior surfaces provided 2 cm^2 for examination. The anterior surface edge is coated with terrestrial weathering products from 10 to 100 μm thick. Some remnant fusion crust, invaded with terrestrial oxides, remains. The same fusion crust/terrestrial oxide association extends along about 2/3 of the length of the posterior edge. Layered fusion crust has accumulated to 120 μm thick at one intersection of anterior and posterior surfaces. Kamacite throughout the section has been heat-altered to α_2. Kamacite lamellae range from 15 to 40 μm wide, their length being 10 to 100 times their width. Schreibersite within 800 μm of the anterior surface has survived heating in the form of quenched eutectic melts. Within 800 μm of the posterior surface schreibersites are either eutectic melts or are melted at their edges. Schreibersites are small, numerous, within kamacite lamellae or at lamellae junctions, and generally in the 50 to 100 μm size range. Martensitic plessite occupies perhaps 60% or more of the surface area, and its Ni content in the 18 to 19 weight percent range approximates the bulk Ni content. This specimen is a finest octahedrite, possibly belonging to chemical group IIID.

Sample No.: LEW86549
Weight (g): 50.1
Dimensions (cm): 3 x 2.5 x 2.5
Meteorite Type: L3 Chondrite

Location: Lewis Cliff
Field No.: 3074

Macroscopic Description: Rene Martinez
About 50% of the surface of this specimen is covered by black polygonally fractured fusion crust. The interior is gray with up to 2 mm-diameter chondrules.

Thin Section (,3) Description: Brian Mason
The section consists mainly of chondrules and chondrule fragments, with a minor amount of dark finely-granular matrix containing a little nickel-iron and troilite. The chondrules are relatively small, the largest 0.9 mm across; most are granular olivine and olivine-pyroxene, but barred olivine and radiating pyroxene chondrules are also present. Weathering is extensive, with brown limonitic staining throughout the section. Olivine and pyroxene are variable in composition: olivine, Fa_{5-20}, mean Fa_{15} (CV FeO is 28); pyroxene, Fs_{1-29}. The low content of nickel-iron suggests L group, and the range of olivine and pyroxene compositions type 3, hence this meteorite is tentatively classified as an L3 chondrite (estimated L3.7).

Sample No.: LEW87001; 87003; 87008; 87022; 87025; 87027; 87028; 87167; 87249
Weight (g): 4.0; 2.1; 1.4; 75.4; 0.9; 0.8; 1.2; 1.4; 3.1
Dimensions (cm): 2x1.2x1; 1.3x1x1; 1.1x1x8; 4x3.5x3.5; 1.3x1.2x0.6; 1.2x0.6x0.7; 1.4x1.2x1; 1.2x1.2x0.8; 1.5x1.3x1.2
Meteorite Type: C2 Chondrite

Location: Lewis Cliff
Field No.: 4403; 4631; 4780; 4400; 4289; 4276; 4297; 4439; 4783

Macroscopic Description: Roberta Score and Carol Schwarz
There are spots of oxidation and small deposits of salt in the interior of most of these pebbles; otherwise the matrix is black with abundant white inclusions. Brown patches of fusion crust cover about 80% of 87022 and it has several penetrating fractures and a 1 mm weathering rind.

Thin Section (LEW87001,2; 87003,2; 87008,2; 87022,8; 87025,2; 87027,2; 87028,2; 87167,2; 87249,2) Description: Brian Mason
The sections of 87001, 87003, and 87249 are so similar in texture and mineral compositions to those of LEW87022 that these meteorites can confidently be paired; LEW87008, 87025, 87027, 87028, and 87167 resemble them macroscopically and have the same specific gravity, and are therefore also tentatively paired with LEW87022. LEW87022 has a dark brown to black matrix with numerous small (up to 0.3 mm) mineral grains and a few chondrules (up to 0.9 mm across). Microprobe analyses show olivine generally close to Mg_2SiO_4 in composition, but also a few Fe-rich grains; pyroxene is less abundant than olivine, and most grains have composition near $MgSiO_3$. These meteorites are C2 chondrites.

Sample No.: LEW87002
Weight (g): 6.9
Dimensions (cm): 2.5 x 1.5 x 1
Meteorite Type: Eucrite, Mg-rich

Location: Lewis Cliff
Field No.: 4418

Macroscopic Description: Rene Martinez
This pebble is an achondrite with black, vitric fusion crust covering about 70% of its surface. It has an igneous texture overall, but appears crushed. Very light colored pyroxene and plagioclase are present.

Thin Section (,4) Description: Brian Mason
The section is made up of clasts, up to 1.2 cm across, of pyroxene with minor plagioclase, in a comminuted groundmass of these minerals. One clast, 6x3 mm, consists of an ophitic intergrowth of plagioclase and pyroxene. Pyroxene composition is Wo_3Fs_{31}; plagioclase composition averages An_{92} (Na_2O 0.8-1.0%). The ophitic clast contains both orthopyroxene (Wo_5Fs_{31}) and augite ($Wo_{44}Fs_{12}$) with some intermediate compositions: plagioclase is An_{91}. While the bulk composition approximates that of a howardite, this meteorite lacks the diogenetic pyroxene characteristic of the howardites; it is probably best classified as an Mg-rich eucrite.

Sample No.: LEW87004
Weight (g): 208.4
Dimensions (cm): 7x 6 x 4.5
Meteorite Type: Polymict Eucrite

Location: Lewis Cliff
Field No.: 4425

Macroscopic Description: Carol Schwarz
This eucrite is ~90% covered by black shiny fusion crust. Flow lines occur on most surfaces. There are a few pitted areas where fusion crust is absent. The interior is gray with mm-sized white clasts, 1-2 mm dark gray inclusions, and minor oxidation.

Thin Section (,2) Description: Brian Mason
The section shows a microbreccia of pyroxene and plagioclase grains, up to 0.6 mm across, in a comminuted groundmass of these minerals; a few small lithic clasts are present. Microprobe analyses show pyroxene with a wide range of compositions: Wo 2-27, Fs 31-56, En 31-61; plagioclase composition is An_{83-89}. The meteorite is a polymict eucrite.

Sample No.: LEW87005; 87015
Weight (g): 17.7; 1.3
Dimensions (cm): 2.7x2.6x2.3; 1.3x1x0.7
Meteorite Type: Howardite

Location: Lewis Cliff
Field No.: 4421; 4052

Macroscopic Description: Carol Schwarz
LEW87005 is covered with about 50% fusion crust. There is one ~3 mm white clast on the "S_1" face of the fusion crust. Other surfaces are weathered to a dark gray with a little oxidation visible. The interior matrix is gray with <2 mm white clasts. There are also several large lithic clasts ~.5 cm in diameter present in the exposed area. About 80% of LEW87015 is covered with fusion crust. Exposed areas are gray in color. The interior is light gray with several 1-2 mm white inclusions.

Thin Section (LEW87005,2;87015,2) Description: Brian Mason
LEW87005,2 shows a microbreccia of lithic clasts and plagioclase and pyroxene grains in a comminuted groundmass of these minerals. Plagioclase grains are generally larger than pyroxene, and range up to 2.4 mm across. Lithic clasts range up to 3 mm across, and show a coarse gabbroic texture. Most pyroxene is pigeonite, averaging Wo_5Fs_{50}, with compositions ranging to augite, $Wo_{46}Fs_{17}$; some orthopyroxene is present, averaging Wo_2Fs_{23}. Plagioclase composition is An_{89-94}. LEW87015,2 is essentially identical in texture to LEW87005,2 but shows some variations in mineral compositions which are not unexpected in howardites. Most pyroxene is pigeonite, averaging Wo_5Fs_{55}, with some compositions ranging to augite, $Wo_{44}Fs_{27}$, but some orthopyroxene is present, compositions ranging from Wo_2Fs_{30} to Wo_1Fs_{14}; plagioclase composition is An_{80-90}. These meteorites are howardites, and are possibly paired.

Sample No.: LEW87006
Weight (g): 269.5
Dimensions (cm): 5.5 x 6 x 3.5
Meteorite Type: Mesosiderite

Location: Lewis Cliff
Field No.: 4714

Macroscopic Description: Roberta Score
Dull, black fusion crust remains as small patches over most of the exterior. Some regmaglypts are present. Several large pyroxene grains are obvious on the exterior of this specimen. The matrix is fine-grained and beige in color. Pyroxene inclusions are numerous, as are sulfides/metal.

Thin Section (,2) Description: Brian Mason
The section shows about 30% of large grains (up to 2 mm) of nickel-iron in a granular matrix of pyroxene with a little plagioclase. Pyroxene grains are up to 1.2 mm across, but many appear to have been deformed to a mosaic of tiny granules. Moderate weathering is indicated by rusty staining around metal grains. Pyroxene composition is fairly uniform, Wo_3Fs_{36}, with minor variation in CaO content (1.2-3.1%); one grain of augite, $Wo_{39}Fs_{17}$, with 1.6% Al_2O_3, was analyzed. Plagioclase composition is An_{89-94}. The meteorite is a mesosiderite.

Sample No.:	LEW87007; 87020; 87294; 87011; 87013; 87017; 87018; 87019; 87021	Location:	Lewis Cliff
Weight (g):	3.2; 1.9; 3.9;1.0; 0.2; 1.3; 1.2; 0.5; 0.5	Field No.:	4448; 4062; 4074; 4060; 4072; 4053; 4073; 4071; 4069
Dimensions (cm):	1x1.5x1; 2x1x0.5; Remainder: largest dimension $\leq$1 cm		
Meteorite Type:	Aubrite		

Macroscopic Description: Roberta Score
The first three specimens above all appear to be paired, as do LEW87011; 87013; 87017; 87018; 87019; and 87021, which have not been thin sectioned because of their small size. They consist of large pyroxene crystals and a small number of rounded, black inclusions in a fine-grained, light-colored matrix.

Thin Section (87007,3;87020,3;87294,5) Description: Brian Mason
These sections are essentially identical and belong to a single meteorite. They are made up almost entirely of pyroxene clasts, up to 6 mm across, in a groundmass of comminuted pyroxene. Plagioclase is present in small amounts, along with accessory nickel-iron and sulfide. Brown limonitic haloes surround the metal grains. Most of the pyroxene is almost pure $MgSiO_3$ (CaO 0.3-0.9%, FeO less than 0.1%); a little diopside, $Wo_{42}En_{58}$, is present. Plagioclase is almost pure albite (K_2O 0.65%, CaO less than 0.1%). The meteorite is an aubrite.

Sample No.:	LEW87009	Location:	Lewis Cliff
Weight (g):	50.5	Field No.:	4413
Dimensions (cm):	5 x 3 x 2		
Meteorite Type:	C6 Chondrite		

Macroscopic Description: Carol Schwarz
About 85% of the exterior of this specimen is covered with fusion crust. Salt deposit has formed in some areas. Areas devoid of fusion crust are greenish and weathered. The interior is greenish-gray with no clasts evident. There is a dark weathering rind along one edge.

Thin Section (,2) Description: Brian Mason
The section shows an aggregate of anhedral grains (0.05-0.3 mm) of olivine with minor plagioclase; blebs of magnetite (0.01-0.03 mm, sometimes aggregated into larger masses) are scattered throughout. Traces of sulfide are present. A black glassy veinlet, 0.08 mm wide, crosses the section. Some of the silicate aggregates have a vaguely chondritic form. Microprobe analyses give the following compositions: olivine, Fa_{31}; plagioclase, An_{44-48}; orthopyroxene was not found, but one grain of augite, $Wo_{44}Fs_{12}$, was analyzed. Mineral compositions resemble those in C4 chondrites, but the relatively coarse grain size and the practical absence of chondritic structure indicates a higher type, hence the meteorite is tentatively classified as a C6 chondrite.

Sample No.:	LEW87010	Location:	Lewis Cliff
Weight (g):	2.6	Field No.:	4777
Dimensions (cm):	2 x 1 x 1		
Meteorite Type:	Unbrecciated Eucrite		

Macroscopic Description: Carol Schwarz
This small fragment is covered with very shiny black fusion crust. The interior is gray and homogeneous with a small amount of oxidation.

Thin Section (,2) Description: Brian Mason
The section shows a subophitic intergrowth of pale brown pigeonite grains (0.3-1.2 mm) and colorless plagioclase laths (up to 1.5 mm long). Pigeonite compositions cluster around Wo_5Fs_{54}, but a little augite, $Wo_{43}Fs_{28}$, is present, and some spots give intermediate compositions. An SiO_2 polymorph, probably tridymite, is present as an accessory. The meteorite is an unbrecciated eucrite; mineral compositions and texture resemble those of LEW86001 and 86002, and the possibility of pairing should be considered.

Sample No.:	LEW87016	Location:	Lewis Cliff
Weight (g):	16.8	Field No.:	4280
Dimensions (cm):	3 x 2 x 2.5		
Meteorite Type:	C2 Chondrite		

Macroscopic Description: Carol Schwarz
This specimen consists of two fragments which fit together. The exterior is very weathered with a small amount of fractured fusion crust remaining. The interior is black with many sub-mm chondrules.

Thin Section (,2) Description: Brian Mason
The section shows chondrules, up to 1.2 mm across, and small mineral grains in a dark brown to black matrix. Microprobe analyses show some olivine near Mg_2SiO_4 in composition, but ranging up to Fa_{28} (mean composition Fa_8); a little pyroxene, near $MgSiO_3$, is present. The meteorite is a C2 chondrite, but does not appear to belong to the LEW87001 group.

Sample No.: LEW87026
Weight (g): 22.7
Dimensions (cm): 2.5 x 2.7 x 2.3
Meteorite Type: Brecciated Eucrite

Location: Lewis Cliff
Field No.: 4211

Macroscopic Description: Carol Schwarz
About 70% of this eucrite is covered with a dull black fusion crust. The interior is light gray and fine-grained with small ($\leq$1 mm) gray and white inclusions.

Thin Section (,2) Description: Brian Mason
The section shows a microbreccia of pale brown pyroxene and colorless plagioclase grains, up to 1.8 mm across, in a comminuted groundmass of these minerals; a few small lithic clasts are present. Most of the pyroxene is pigeonite averaging Wo_7Fs_{47}, but a little augite, $Wo_{36}Fs_{32}$, is present, and intermediate compositions were measured on some spots. Plagioclase composition is An_{87-93}. The meteorite is a brecciated eucrite, probably monomict.

Sample No.: LEW87271
Weight (g): 0.9
Dimensions (cm): 1.8 x 0.6 x 1
Meteorite Type: C2 Chondrite

Location: Lewis Cliff
Field No.: 4750

Macroscopic Description: Carol Schwarz
This small smooth fragment is covered with black fractured fusion crust except for one weathered surface devoid of fusion crust. The interior is black to brownish in color with small <1 mm inclusions. Salt deposits are abundant next to the fusion crust.

Thin Section (,2) Description: Brian Mason
The section shows sparse chondrules, up to 0.6 mm across, and small mineral grains in a dark brown to black matrix. Microprobe analyses show most olivine near Mg_2SiO_4 in composition, but ranging up to Fa_{24} (mean composition is Fa_4); a little pyroxene, near $MgSiO_3$, is present. The meteorite is a C2 chondrite, but does not appear to belong to the LEW87001 group.

Sample No.:	MAC87300; 87301	Location:	MacAlpine Hills
Weight (g):	167.5; 110.9	Field No.:	4624; 4608
Dimensions (cm):	6x5.5x3.5; 5.5x5x3.5		
Meteorite Type:	C2 Chondrite		

Macroscopic Description: Cecilia Satterwhite
About 40-50% of the exterior of these fragments is covered with dull black fusion crust. Interior is dark black to gray with many white inclusions. One large dark-red clast (1 cm) is conspicuous on both of these samples.

Thin Section (87300,2; 87301,7) Description: Brian Mason
These sections are so similar in all respects that these meteorites are almost certainly paired. Chondrules are abundant but small (up to 0.6 mm across) and, together with chondrule fragments and mineral grains, are set in a dark brown to black matrix. Chondrules consist of granular or porphyritic olivine and olivine-pyroxene; mineral grains are mainly olivine. Microprobe analyses show that most of the olivine is near Mg_2SiO_4 in composition, but a few iron-rich grains were analyzed; mean composition is Fa_7. Pyroxene composition ranges from Fs_1 to Fs_9. The meteorites are C2 chondrites.

Sample No.:	MAC87302; 87303	Location:	MacAlpine Hills
Weight (g):	1094.6; 254.2	Field No.:	4384; 4392
Dimensions (cm):	10x8x8; 7x6x4		
Meteorite Type:	L4 Chondrite		

Macroscopic Description: Rene Martinez
MAC87302 is rounded and 87303 is angular and these do not fit together, but macroscopically these two rocks are identical. Matrix is light-gray and inclusions are mostly light-colored. Some of the larger clasts are angular and appear to be clasts of ordinary chondrite material. The rest are clearly chondrules. There are small pockets of sulfide about 3-5 mm across as well as smaller grains disseminated throughout.

Thin Section (87302,13;87303,10) Description: Brian Mason
These sections are very similar in all respects and the meteorites are almost certainly paired. Chondrules and chondrule fragments are abundant, up to 2.4 mm across, but their margins tend to merge with the finely granular matrix, which consists of olivine and pyroxene with minor amounts of nickel-iron and troilite. Microprobe analyses give the following compositions: olivine, Fa_{24}; pyroxene, Fs_{20}. The meteorites are L4 chondrites.

Sample No.:	MAC87310	Location:	MacAlpine Hills
Weight (g):	411.0	Field No.:	4545
Dimensions (cm):	7 x 7 x 5		
Meteorite Type:	L4 Chondrite with enclave		

Macroscopic Description: Rene Martinez
The interior of this meteorite is dark gray with light and dark irregular inclusions and chondrules. The specimen is nearly spherical and very coherent. No fusion crust remains. The specimen was sawn to sample the interior and contaminated slightly with oil in the process.

Thin Section (,14) Description: Brian Mason
The section shows abundant chondrules and chondrule fragments (up to 1.8 mm across) in a fine-grained matrix of olivine and pyroxene, with minor nickel-iron and troilite. In the center of the section is an angular clast, 6 x 3 mm, consisting essentially of fine-grained (0.05 mm) olivine. Mineral compositions of the main part are: olivine, Fa_{23}; pyroxene, Fs_{19}. Clast olivine is Fa_{14-20}. The meteorite is an L4 chondrite, but the clast is clearly foreign.

Table 4. Natural thermoluminescence level in meteorites recovered during the 1986/87 field season (Data set: April 1988). Please contact Fouad A. Hasan or Derek W.G. Sears at the University of Arkansas for more information.

SAMPLE	LT/HT(*)	E.D.(@)	SAMPLE	LT/HT(*)	E.D.(@)
ALH 85151	6.6 +/-0.1	60+/-5	LEW 86081	4.5 +/-0.05	38+/-4
ALH 85152	4.3 +/-0.1	88+/-10	LEW 86083	2.21+/-0.16	17+/-2
ALH 85155	4.9 +/-0.8	67+/-5	LEW 86084	1.86+/-0.1	17+/-1
ALH 85156	0.76+/-0.02	12+/-3	LEW 86085	1.34+/-0.07	17+/-1
ALH 86600	1.69+/-0.03	43+/-3	LEW 86086	4.5 +/-0.12	24+/-9
ALH 86601	0.52+/-0.05	4+/-0.4	LEW 86089	0.47+/-0.03	5+/-1
ALH 86602	0.84+/-0.02	20+/-1	LEW 86090	0.63+/-0.01	19+/-6
EET 86800	- -	3+/-0.1	LEW 86091	1.00+/-0.01	12+/-1
EET 86801	0.7 +/-0.01	13+/-0.6	LEW 86096	3.86+/-0.06	45+/-6
EET 86802	1.89+/-0.07	32+/-1	LEW 86098	- -	3+/-0.1
LEW 86001	- -	25+/-4	LEW 86099	0.82+/-0.03	16+/-1
LEW 86002	- -	12+/-3	LEW 86101	0.104+/-0.01	5+/-1
LEW 86011	6.67+/- 0.02	79+/-2	LEW 86110	2.95+/-0.3	27+/-1
LEW 86012	2.85+/-0.05	47+/-5	LEW 86111	3.2 +/-1.5	40+/-15
LEW 86013	4.5 +/-0.08	64+/-7	LEW 86115	2.92+/-0.04	57+/-1
LEW 86014	4.49+/-0.09	73+/-1	LEW 86118	0.39+/-0.07	4+/-0.07
LEW 86015	5.5 +/-0.26	56+/-5	LEW 86120	1.56+/-0.06	19+/-3
LEW 86016	0.72+/-0.03	17+/-1	LEW 86134	- -	3.6+/-0.5
LEW 86017	1.27+/-0.07	27+/-9	LEW 86135	4.3 +/-0.2	83+/-9
LEW 86018	- -	3+/-0.5	LEW 86138	7.9 +/-0.9	57+/-12
LEW 86019	5.27+/-0.03	80+/-8	LEW 86152	4.98+/-0.11	63+/-11
LEW 86020	2.24+/-0.01	20+/-1	LEW 86160	0.85+/-0.03	9+/-3
LEW 86021	2.25+/-0.11	16+/-1	LEW 86161	3.6 +/-0.06	68+/-15
LEW 86022	- -	2.4+/-0.5	LEW 86163	0.21+/-0.014	9+/-3
LEW 86023	1.97+/-0.15	107+/-8	LEW 86164	1.03+/-0.04	10+/-2
LEW 86024	1.51+/-0.01	41+/-2	LEW 86165	2.9 +/-0.04	39+/-4
LEW 86025	0.05+/-0.00	0.8+/-0.1	LEW 86166	0.28+/-0.02	1.4+/-0.2
LEW 86026	3.43+/-0.1	59+/-11	LEW 86168	4.57+/-0.14	42+/-7
LEW 86028	2.3 +/-0.17	19+/-1	LEW 86174	4.38+/-0.16	47+/-3
LEW 86031	5.65+/-0.13	51+/-11	LEW 86181	1.23+/-0.1	19+/-3
LEW 86033	3.27+/-0.1	37+/-4	LEW 86183	1.5 +/-0.04	26+/-8
LEW 86035	4.62+/-0.003	50+/-5	LEW 86186	1.3 +/-0.02	10+/-1
LEW 86040	6.1 +/-0.2	109+/-18	LEW 86195	1.21+/-0.04	42+/-1
LEW 86041	0.28+/-0.01	4+/-0.5	LEW 86199	1.8 +/-0.006	31+/-1
LEW 86043	1.7 +/-0.02	24+/-6	LEW 86203	- -	14+/-3
LEW 86044	1.51+/-0.06	27+/-8	LEW 86204	0.82+/-0.001	11+/-7
LEW 86047	2.02+/-0.05	22+/-6	LEW 86206	4.6 +/-0.05	70+/-12
LEW 86050	6.00+/-0.6	54+/-11	LEW 86207	- -	7+/-1
LEW 86053	2.9 +/-0.3	27+/-3	LEW 86211	- -	5.3+/-1
LEW 86056	0.9 +/-0.05	8+/-1	LEW 86213	- -	12+/-2
LEW 86057	3.9 +/-0.3	42+/-5	LEW 86215	0.77+/-0.08	12+/-3
LEW 86060	0.19+/-0.01	1.3+/-0.2	LEW 86225	2.5 +/-0.04	46+/-9
LEW 86070	3.14+/-0.05	57+/-7	LEW 86228	3.06+/-0.05	41+/-3
LEW 86072	3.25+/-0.03	28+/-2	LEW 86232	3.3 +/-0.2	60+/-9
LEW 86073	2.66+/-0.17	12+/-2	LEW 86238	0.24+/-0.004	53+/-3
LEW 86077	4.77+/-0.3	54+/-9	LEW 86249	1.27+/-0.07	20+/-4
LEW 86078	4.95+/-0.2	52+/-3	LEW 86250	2.61+/-0.1	34+/-5
LEW 86079	3.5 +/-0.02	29+/-2	LEW 86251	3.06+/-0.04	45+/-18

Table 4, Continued

SAMPLE	LT/HT(*)	E.D.(@)	SAMPLE	LT/HT(*)	E.D.(@)
LEW 86252	6.58+/-0.8	19+/-3	LEW 86286	11.6 +/-0.1	98+/-6
LEW 86255	3.26+/-0.03	47+/-4	LEW 86518	2.54+/-0.08	37+/-12
LEW 86258	- -	4+/-2	QUE 86900	- -	14+/-6
LEW 86266	1.63+/-0.04	15+/-1	RKP 86700	0.51+/-0.16	8+/-1
LEW 86268	1.2 +/-0.1	26+/-5	RKP 86701	2.28+/-0.05	82+/-3
LEW 86273	1.98+/-0.06	55+/-11	RKP 86702	1.15+/-0.1	37+/-2
LEW 86282	4.35+/-0.01	90+/-11	RKP 86704	2.23+/-0.15	41+/-8

(*)Ratio of the height of the low temperature peak (250°C) to the height of the high temperature peak (400°C).

(@)E.D.: Equivalent dose in krad at 250°C glow-curve temperature.

Table 5. ^{26}Al survey of Antarctic meteorites (1977-1984). Data are from John Evans, John Wacker and James Reeves of Battelle NW.

Specimen number	Class	26Al dpm/kg	Specimen number	Class	26Al dpm/kg	Specimen number	Class	26Al dpm/kg
ALHA77007	H5	36±2	ALHA81017	L5	54±2	ALHA83006	H5	53±2
ALHA77008	L6	49±3	ALHA81019	H5	41±2	ALHA83007	L3	58±2
ALHA77013	L3	44±5	ALHA81022	H4	44±2	ALHA83008	L3	38±2
ALHA77050	L3	36±4	ALHA81024	L3	40±2	ALHA83010	L3	50±2
ALHA77052	L3	42±3	ALHA81025	L3	45±3	ALHA83011	L5	44±2
ALHA77060	LL5	38±3	ALHA81026	L6	63±3	ALHA83013	H6	58±3
ALHA77078	H5	67±8	ALHA81029	L6	39±2	ALHA83067	L6	42±2
ALHA77084	H5	53±7	ALHA81031	L3	30±1	ALHA83070	LL6	62±3
ALHA77085	H5	37±4	ALHA81032	L3	45±2	ALHA84057	L6	42±2
ALHA77087	H5	41±10	ALHA81038	H6	35±2	ALHA84059	H4	43±2
ALHA77088	H5	55±6	ALHA81039	H5	56±2	ALHA84060	H5	59±2
ALHA77092	H5	44±7	ALHA81040	L4	65±3	ALHA84061	L6	46±2
ALHA77111	H6	20±7	ALHA81041	H4	52±2	ALHA84062	L6	46±2
ALHA77112	H5	29±15	ALHA81042	H5	50±2	ALHA84063	L5	54±2
ALHA77132	H5	42±2	ALHA81043	H4	56±3	ALHA84066	L6	73±3
ALHA77155	L6	71±3	ALHA81044	H4	53±2	ALHA84067	H5	54±2
ALHA77157	H6	52±3	ALHA81048	H4	58±3	ALHA84068	H5	46±2
ALHA77166	L3	35±2	ALHA81064	H5	59±3	ALHA84069	H5	40±2
ALHA77180	L6	56±2	ALHA81094	H6	58±3	ALHA84070	L6	52±4
ALHA77183	H6	38±2	ALHA81099	L6	80±4	ALHA84071	H6	45±1
ALHA77184	H5	48±2	ALHA81100	H5	49±2	ALHA84072	L6	41±2
ALHA77186	H5	59±3	ALHA81102	H6	36±2	ALHA84073	H5	34±1
ALHA77188	H5	61±2	èALHA81103	H6	49±2	ALHA84074	H5	33±1
ALHA77221	H4	57±2	ALHA81104	H4	57±2	ALHA84075	H5	49±2
ALHA77223	H4	56±2	ALHA81105	H4	54±3	ALHA84076	H5	64±3
ALHA77241	L3	35±2	ALHA81111	H6	38±2	ALHA84077	H5	45±2

Table 5, Continued

Specimen number	Class	26Al dpm/kg	Specimen number	Class	26Al dpm/kg	Specimen number	Class	26Al dpm/kg
ALHA77252	L3	42±2	ALHA81112	H6	39±2	ALHA84078	H5	65±3
ALHA77254	L5	53±2	ALHA81113	H5	61±3	ALHA84079	L6	65±3
ALHA77266	H5	42±2	ALHA81115	H5	40±2	ALHA84080	L6	26±1
ALHA77267	L5	61±4	ALHA81119	L4	36±2	ALHA84081	LL6	46±2
ALHA77268	H5	51±2	ALHA81161	H5	54±2	ALHA84082	H6	40±2
ALHA77279	H5	39±2	ALHA81183	H5	53±3	ALHA84083	H6	38±2
ALHA77281	L6	42±2	ALHA81247	L6	44±2	ALHA84084	H4	59±2
ALHA77295	EH4	57±4	ALHA81251	LL3	45±2	ALHA84085	H5	49±2
ALHA78047	H5	33±1	ALHA81260	E6	33±2	ALHA84086	LL3	56±2
ALHA78085	H5	50±2	ALHA81295	H5	52±2	ALHA84087	L6	69±3
ALHA78101	L6	48±3	ALHA82104	L5	62±2	ALHA84088	H5	60±3
ALHA78108	H5	55±3	ALHA82105	L6	45±2	ALHA84089	H5	49±2
ALHA78111	H5	53±3	ALHA82118	L6	59±3	ALHA84090	L6	40±2
ALHA78116	H5	36±2	ALHA82122	H5	44±2	ALHA84091	H5	50±2
ALHA78119	L3	42±3	ALHA82125	L6	36±2	ALHA84092	L6	63±3
ALHA78127	L6	46±3	ALHA82126	H4	54±2	ALHA84093	H6	69±4
ALHA78129	H5	59±3	ALHA83001	L4	40±1	ALHA84094	H5	54±3
ALHA79046	H5	50±3	ALHA83002	L5	28±1	ALHA84095	L6	33±2
ALHA79053	H5	60±3	ALHA83003	H5	39±2	ALHA84096	C4	70±4
ALHA80116	L6	60±2	ALHA83004	L6	53±2	ALHA84097	L6	63±4
ALHA80117	L6	62±3	ALHA83005	H5	34±2	ALHA84098	H5	65±3